

September 2005

# RADIOLOGICAL SOURCES IN IRAQ

## DOD Should Evaluate Its Source Recovery Effort and Apply Lessons Learned to Future Recovery Missions



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## Why GAO Did This Study

Following the invasion of Iraq in March 2003, concerns were raised about the security of Iraq's radiological sources. Such sources are used in medicine, industry, and research, but unsecured sources could pose risks of radiation exposure, and terrorists could use them to make "dirty bombs." This report provides information on (1) the readiness of the Department of Defense (DOD) to collect and secure sources, (2) the number of sources DOD collected and secured, (3) U.S. assistance to help regulate sources in Iraq, and (4) the lessons DOD and the Department of Energy learned.

## What GAO Recommends

GAO recommends, among other things, that DOD (1) assess lessons learned from securing sources in Iraq and (2) ensure that advanced planning occurs prior to any future missions. DOD concurred or partially concurred with most of our recommendations and did not concur with two of them, stating that our report focused on the later phase of source recovery and that it accepted our recommendations for that phase. Our recommendations apply to all phases of the effort and we revised some to clarify this. The Department of State provided clarifications regarding U.S. assistance to Iraq and reasons for a delay in approval of export licensing. DOE had no written comments but stated it would work with DOD to help define sources of greatest risk.

[www.gao.gov/cgi-bin/getrpt?GAO-05-672](http://www.gao.gov/cgi-bin/getrpt?GAO-05-672).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Gene Aloise at (202) 512-3841 or [aloisee@gao.gov](mailto:aloisee@gao.gov).

# RADIOLOGICAL SOURCES IN IRAQ

## DOD Should Evaluate Its Source Recovery Effort and Apply Lessons Learned to Future Recovery Missions

### What GAO Found

DOD was not ready to collect and secure radiological sources when the war began in March 2003 and for about 6 months thereafter. Before DOD could collect radiological sources, it had to specify criteria for which sources should be collected and how to safely collect them, coordinate within DOD, coordinate assistance from the Department of Energy (DOE), and resolve contract issues. DOD did not issue guidance for collecting and securing sources until July 2003 and did not finalize the terms of the contract to collect sources until September 2003. Until radiological sources could be collected, some sources were looted and scattered, and some troops were diverted from their regular combat duties to guard sources in diverse places.

In June 2004, DOD removed about 1,000 of the 1,400 radiological sources collected in Iraq and sent them to the United States for disposal. DOD left in place approximately 700 additional sources that it had judged were adequately secured and being used properly by Iraqis. According to DOD and Department of State officials, however, the total number of radiological sources in Iraq remains unknown.

The United States assisted in establishing an Iraqi agency to regulate radiological sources. Since June 2004, State and DOE have helped this new agency develop an action plan with assistance from the International Atomic Energy Agency. However, according to State officials, because of uncertainties associated with the continuing formation of the Iraqi government, State will have to monitor Iraqi efforts to ensure the continued growth and success of an independent, competent, and sustainable regulatory authority for the control of radioactive sources and materials.

Both DOD and DOE are considering improvements based on their Iraq experiences. A 2004 study of lessons learned, requested by DOD, recommended that DOD develop the capability to quickly eliminate weapons of mass destruction in hostile environments, but it did not focus on the narrower radiological source mission. In contrast, DOE has contracted for a study to examine lessons from its role in removing radiological sources from Iraq.

**Bunker Where DOD Secured Radiological Sources, Tuwaitha, Iraq**



Source: DTRA.

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**Abbreviations**

DOD	Department of Defense
DOE	Department of Energy
DTRA	Defense Threat Reduction Agency
IAEA	International Atomic Energy Agency
IRSRA	Iraqi Radiological Source Regulatory Authority
MOST	Ministry of Science and Technology (Iraq)
NDU	National Defense University
WMD	weapons of mass destruction

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United States Government Accountability Office  
Washington, D.C. 20548

September 7, 2005

The Honorable John Warner  
Chairman  
The Honorable Carl Levin  
Ranking Minority Member  
Committee on Armed Services  
United States Senate

The Honorable Duncan Hunter  
Chairman  
The Honorable Ike Skelton  
Ranking Minority Member  
Committee on Armed Services  
House of Representatives

In March 2003, citing the failure of Iraq to live up to agreements to disarm itself of weapons of mass destruction (WMD), and other concerns, the United States and its coalition allies invaded Iraq. This conflict is known as Operation Iraqi Freedom. During late 2002 and early 2003, the U.S. Department of Defense (DOD) had made plans to find and eliminate the suspected WMD. DOD's Defense Threat Reduction Agency (DTRA) was to be responsible for hiring a contractor to dispose of WMD and their component materials, such as biological agents, chemicals, and radioactive materials.<sup>1</sup> The radioactive materials included (1) nuclear materials, such as processed uranium, which could be used in a nuclear weapon, and (2) radiological sources, which are widely used throughout the world in medicine, agriculture, research, and industry and could be combined with conventional explosives to create a radiological dispersion device, a weapon known as a "dirty bomb." Thus, DOD's plan to eliminate WMD included the removal of radiological sources, which are not weapons but could be improvised by terrorists into dirty bombs.

The Department of Energy (DOE) and Department of State also had responsibilities in the mission to secure radiological sources in Iraq. By early 2003, DOD was planning for DOE to be involved in both removing and

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<sup>1</sup>For information on DTRA's broader mission to address the threat of WMD, see GAO, *Weapons of Mass Destruction: Defense Threat Reduction Agency Addresses Broad Range of Threats, but Performance Reporting Can Be Improved*, [GAO-04-330](#) (Washington, D.C.: Feb. 13, 2004).

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disposing of sources from Iraq. After the transfer of power from the Coalition Provisional Authority<sup>2</sup> to the interim Iraqi government in June 2004, State had lead responsibility for helping Iraq regulate the radiological sources remaining in the country.

Although the United States did not find stockpiles of WMD in Iraq, U.S. forces found partially processed uranium and radiological sources that the International Atomic Energy Agency (IAEA) had previously secured at nuclear facilities. In addition, U.S. forces found radiological sources throughout Iraq, many of which were unsecured and in danger of being looted. Citing media reports of looting at nuclear sites, IAEA and Members of the Congress raised concerns about the security of nuclear materials and radiological sources. Reflecting these concerns, during a July 2003 Senate Armed Services hearing, the Ranking Minority Member of the Readiness and Management Support Subcommittee asked the Secretary of Defense about the security of radiological sources in Iraq. DOD replied in a January 2004 letter that numerous sources had been collected and that efforts were under way to identify and secure others.

Shortly thereafter, the Ranking Minority Member's office asked us for an update on the security of radiological sources in Iraq, and we initiated a review of the effort to collect and secure these sources. Because of the broad interest in this issue, we conducted this work under the authority of the Comptroller General and are issuing this report to the Senate and House Committees on Armed Services. This report (1) assesses DOD readiness to collect and secure radiological sources in Iraq from the start of the 2003 war; (2) presents information on the number of radiological sources DTRA had secured by the time of the June 2004 transition to the interim Iraqi government; (3) describes the assistance the United States has provided, and plans to provide in the future, to the Iraqi government to help regulate radiological sources in Iraq; and (4) examines DOD and DOE actions to assess their experiences in Iraq and apply any lessons learned to possible future radiological source collection missions.

To assess DOD's readiness to collect and secure radiological sources, we reviewed available policy guidance and reports on individual missions to collect sources and interviewed DOD and contractor officials. To present information on the number of radiological sources secured, we reviewed

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<sup>2</sup>The Coalition Provisional Authority, led by the United States and the United Kingdom, was responsible for temporarily governing Iraq.

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DOD inventories of sources left in Iraq and sources collected, interviewed officials about the reliability of these inventories, and reviewed available mission guidance and other documents. We assessed the reliability of DTRA's inventories of radiological sources, including independently corroborating the information when possible, based on discussions with those responsible for the inventories. With one exception, we determined that the data were sufficiently reliable for the purposes of this report. To describe U.S. efforts to help the interim Iraqi government regulate sources, we examined the Department of State's planning documents and a Coalition Provisional Authority order to establish an Iraqi agency to regulate radiological sources. We also discussed plans for assistance with State and DOE officials as well as with Iraqi officials visiting the United States. Finally, to describe what DOD and DOE have done to learn from their experience in Iraq, and how such lessons might be applied in the future, we interviewed DOD and DOE officials about their efforts to identify and document lessons learned and examined draft and published documents on the mission to dispose of Iraqi WMD. Because of the continuing hostilities, we did not travel to Iraq. We performed our work from May 2004 through August 2005 in accordance with generally accepted government auditing standards. Details of our methodology are provided in appendix I.

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## Results in Brief

DOD was not ready to collect and secure radiological sources when the war began in March 2003 and for about 6 months thereafter. Although DOD's prewar plan included removing radiological sources from Iraq, DOD did not issue guidance for collecting and securing them until July 2003 and did not finalize the terms of the contract that would allow the radiological sources to be collected and secured until September 2003, 6 months after the beginning of the war. During this 6-month period, individual military commanders, who possessed limited equipment to handle the radiological sources they were finding, had to make decisions regarding which radiological sources should be secured and how to safely collect them. Illustrating the readiness problems, one commander, lacking the proper equipment, had to move highly radioactive sources with an ice cooler that was lined with lead bricks. In other instances, troops were diverted from their regular combat duties to guard unsecured radiological sources at various places around the country until the sources could be properly packaged and removed. According to one officer, field commanders were concerned that their troops guarding sources in some places were placed at greater risk for enemy attack. In addition, the scattering of radiological sources by looters complicated their collection. DTRA was responsible for



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collecting radiological sources in Iraq. However, DTRA officials explained that collecting these sources only gradually became a mission focus as it became clear that the broader hunt for WMD was unsuccessful. Furthermore, before DTRA could collect radiological sources, it had to specify criteria regarding which sources should be collected and how to safely collect them, coordinate within DOD for armed protection for DTRA's contractor as they sought radiological sources, coordinate assistance from DOE, and resolve legal liability issues regarding potential damages resulting from its contractor's work to collect the radioactive sources.

By the end of June 2004, DTRA had removed about 1,000 of 1,400 collected radiological sources from Iraq and sent them to the United States. DTRA left in place approximately 700 additional sources that it had judged were adequately secured and being used properly by Iraqis—for example, for industrial and medical purposes. According to DOD and State officials, however, the total number of unsecured radiological sources in Iraq remains unknown. For instance, even after DTRA completed collecting and securing sources, according to Department of State officials, a neighboring country twice detected trucks leaving Iraq with unsecured radiological sources. Despite the difficulties encountered in collecting and securing radiological sources in Iraq during ongoing hostilities, according to DOD officials, DTRA and its contractor successfully carried out about 140 collection missions without fatalities or severe exposure to radiation. However, for the removal of sources from Iraq, DOE had difficulty obtaining accurate information from DOD regarding the type and radioactivity of the sources. DOE needed this information to determine the type and number of transportation containers needed to remove the sources. According to DOE officials, the final disposition of the radiological materials removed from Iraq may take longer and cost more than estimated because a legal determination is needed regarding whether the United States government owns the material or is merely serving as its custodian. According to these officials, they raised this issue of ownership when the removal mission was being planned, but it was never resolved.

The United States assisted in establishing an Iraqi agency to regulate radiological sources. The Department of State worked with the Coalition Provisional Authority and later with the interim government to create an Iraqi agency to regulate radiological sources, the Iraqi Radiological Source Regulatory Agency. In addition, State developed budget and organizational plans for the regulatory agency and shared them with Iraqi officials appointed by the Coalition Provisional Authority. Since the political

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transition to the interim Iraqi government in June 2004, State has helped to firmly establish the agency by facilitating the transfer of DTRA equipment to the new government and, with funding support from DOE, coordinating meetings between Iraqi officials and the IAEA to create an action plan. Further, State, DOE, and IAEA have agreed to offer additional technical and financial support in such areas as regulation writing, border control, and security upgrades. However, according to State officials, because of uncertainties associated with the continuing formation of the Iraqi government, State will have to monitor Iraqi efforts to ensure the continued growth and success of an independent, competent, and sustainable regulatory authority for the control of radioactive sources and materials.

Both DOD and DOE are considering improvements based on their Iraq experiences. However, DOD's assessment focuses on its intended WMD mission rather than on the radiological source mission. DOD requested a study from its National Defense University to assess lessons learned from the WMD mission in Iraq and to recommend improvements for possible future missions. The resulting report did not offer any observations or recommendations regarding the mission to collect and secure radiological sources in Iraq. However, it stated that DOD had not sufficiently planned and prepared for the WMD mission; had shortfalls in the needed transportation, military security, and logistics resources; and had operational difficulties because of the extensive looting, public disorder, and hostile security environment. The report recommended that DOD develop the capability to quickly eliminate WMD in hostile environments and develop a permanent organization to eliminate WMD. Consistent with this recommendation, DOD assigned its Strategic Command responsibility for planning and ensuring the capacity for possible future missions to eliminate WMD, which a DOD Joint Staff officer told us would include the elimination of radiological sealed sources. In contrast to DOD's focus on the WMD mission, DOE has contracted for a study to examine lessons from its radiological source removal mission. DOE considered establishing a reserve of equipment to handle and package radiological material to ensure rapid action in the future but decided that it could not proceed because of current budget constraints.

To ensure that problems experienced with collecting and securing radiological sources in Iraq are avoided to the extent possible in future missions, we are recommending that the Secretary of Defense, among other things, ensure that planning for such missions is completed prior to their initiation. Such planning should include developing specific guidance for collecting and securing radiological sources and coordinating any

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needed assistance with DOE. Furthermore, we are recommending that the Secretary of Defense comprehensively review DOD's experience with collecting and securing radiological sources in Iraq for lessons learned to apply to possible future missions.

We provided the Departments of Defense, State, and Energy with draft copies of this report for their review and comment. DOD concurred or partially concurred with most of our recommendations and did not concur with two of them, stating that our report focused on the later phase of source recovery and that it accepted our recommendations for that phase. Our recommendations apply to all phases of the effort and we revised some recommendations to clarify this. We also incorporated into the report State's clarifications of (1) its current outlook for U.S. assistance to Iraq on radioactive source regulation and (2) the reason for the delay in State's approval of export licensing. DOE had no written comments on the report but did state that it will work with DOD to determine criteria to define which radiological sources are of greatest risk.

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## Background

Widespread looting—including looting of radiological sources—became a major problem in Iraq after the March 2003 coalition forces invasion, complicating U.S. efforts to secure and collect radiological sources. Media reports of the looting at Iraq's Tuwaitha Nuclear Research Center, for example, brought public attention to the scattering of radioactive materials throughout populated areas, posing health and safety risks to Iraqis. In May 2003, the IAEA, which had inventoried nuclear and radiological materials at Tuwaitha, raised concerns about Iraqi citizens' exposure to radiation and publicly asked the United States to secure these materials.

Given the extensive looting, DOD could not assume that facilities and items within them, including radiological sources, would remain intact or in place for later collection without being secured. Many facilities that were no longer under the control of Iraqis, such as abandoned government research facilities and industrial complexes, were looted. For example, a 2004 government report on the search for WMD stated that looters often destroyed sites after a coalition military unit moved through an area, since the coalition did not have the forces available to secure the various sites thought to be associated with WMD. According to one DTRA official, the looting was more extensive than he had ever seen before. The looting was reported to have included removing wiring and pipes from walls and from the ground; stealing desks, windows, sinks, and floors; and even dismantling and removing whole buildings. While some looting may have

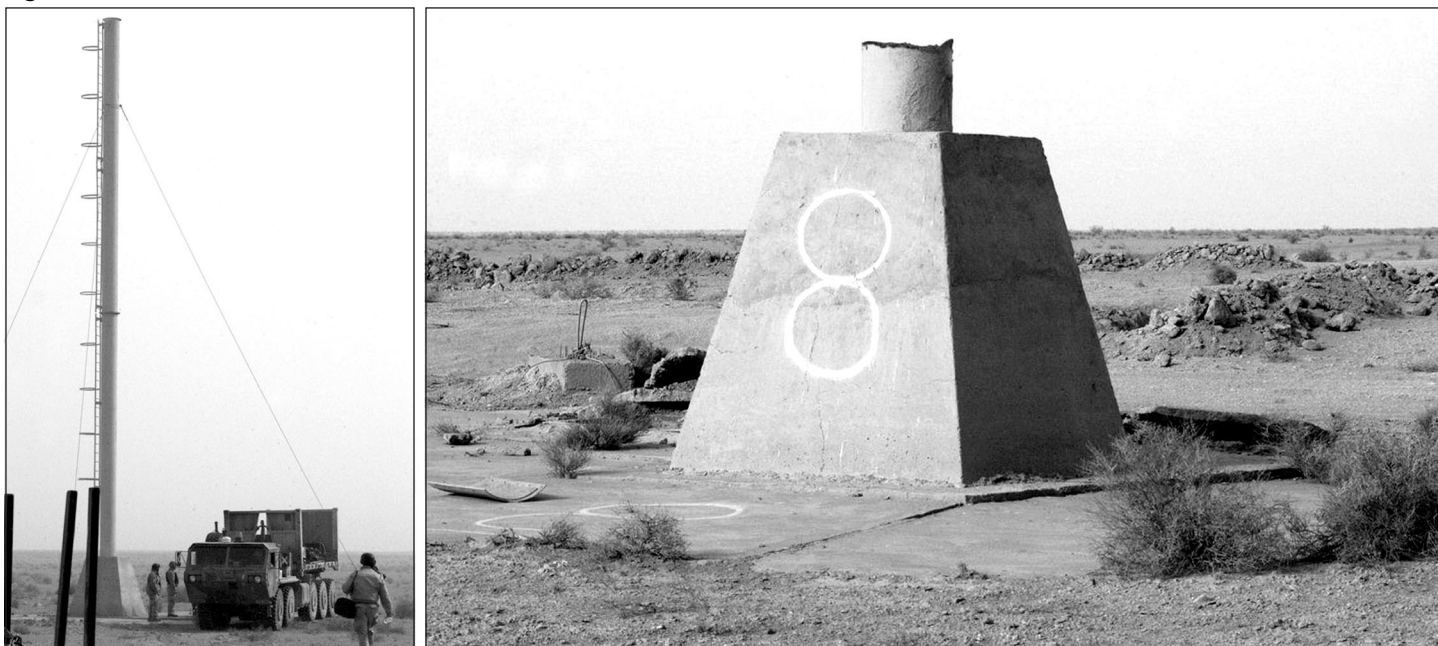
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been done to thwart the U.S. mission, according to DTRA officials, most of it seemed to be related to selling or reusing common materials such as scrap metal rather than seeking radiological or nuclear materials. At the Tuwaitha facility, for example, looters dumped partially processed uranium ore from large containers onto the floor and took the containers.

DOD found that fully securing sources from looters was challenging because of their persistence. According to a DTRA official's personal assessment, no amount of forces could have controlled the rampant looting. At the Tuwaitha Nuclear Research Center, DOD concentrated security in those areas where radiological and nuclear materials were stored, but looters continued to penetrate the less secure areas of Tuwaitha, a large complex of over 90 buildings.

The scattering of radiological sources by looters complicated the later collection of those sources. In one dramatic instance, looters stole large cobalt sources from an Iraqi radiological test site in early September 2003, when U.S. troops were guarding the site. The large, open site, which was apparently designed for carrying out radiation exposure experiments in the surrounding areas, contained eight metal pillars, each with a pulley system to raise a cobalt source from a concrete storage pit to the pillar's top. Looters tore down and removed three of these pillars and also took the cobalt sources from two of them. (See fig. 1.) After several days of extensive searches in the area, DTRA recovered both stolen sources. According to a DTRA official, the metal pillars were probably the looters' intended target, and the sources may have been taken unintentionally when they became caught in the pulley mechanisms.

**Figure 1: An Intact Pillar and a Looted Metal Pillar That Contained Cobalt Sources**



Source: DTRA.

## DOD Was Not Ready to Collect and Secure Radiological Sources in Iraq at the Start of the Hostilities in March 2003

For about the first 6 months after the war began in March 2003, military commanders had insufficient guidance and equipment appropriate for collecting and securing radiological sources that they discovered. As a result, they were forced to make ad hoc decisions about recovering and securing these sources. During this time, DTRA—the agency DOD had assigned to the WMD elimination mission 12 days before the war began—was working to fill gaps in preparations for the mission to collect and secure radiological sources. It was not until September 2003 that DTRA finalized the terms of the contract for collecting the radiological sources and collections began throughout Iraq.

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## Insufficient Guidance and Equipment Left Military Commanders to Make Ad Hoc Decisions about Collecting Radiological Sources from March to September 2003

Military commanders in Iraq initially had no policy guidance on which radiological sources to collect, and what to do with them once they were collected. DOD did have some specialized teams with radiological expertise, such as the 11-person Nuclear Disablement Team, which had been set up to disable WMD and associated production facilities in Iraq. This team had the expertise to move radiological sources, including packaging radioactive material and designing safety procedures to minimize radiation exposure. However, military commanders lacked sufficient equipment appropriate for safely collecting and moving radiological sources.

Without adequate official guidance and equipment to handle the radiological sources they encountered in Iraq, military commanders were left to make ad hoc decisions about recovering and securing the sources. They acted because they were concerned about the inherent health and safety risks of radiological sources to coalition soldiers and the Iraqi populace, as well as the potential for enemy or terrorist forces to use the sources to construct dirty bombs. For example, lacking the proper radiation shielding equipment, the Nuclear Disablement Team moved a radiological source to Tuwaitha with improvised shielding because an officer judged that the unshielded source posed the risk of radiation exposure to Iraqis working in the vicinity. The team created what was described as “field expedient” packaging by lining an ice chest with lead bricks that were brought from the Tuwaitha Nuclear Research Center. However, the container did not sufficiently shield the driver of the military vehicle carrying the source from radiation exposure. Therefore, the team further improvised shielding by placing metal sheets salvaged at the site between the driver and the container in the back of the vehicle. This additional shielding reduced the radiation at the driver’s seat to a level that just met the team’s safety standard for exposure. However, the radiation in the back of the vehicle still exceeded that standard. Consequently, a second military vehicle followed the loaded vehicle at a safe distance to prevent occupants of any other vehicles from following so closely that they would be exposed to unsafe levels of radiation. On the basis of his assessment of the team’s experience with moving the source described above, the commander of the Nuclear Disablement Team decided it was too risky to allow his troops to move any more sources without proper handling equipment and containers.

Because some military officers were reluctant to move radiological sources to a single consolidation site without adequate handling and packaging equipment or official guidance, coalition forces had their troops guarding

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sources around Iraq. In some cases this posed health risks—for example, some sources were secured in bases where U.S. troops were already stationed, creating the need to protect the troops from accidental exposure to radiation. When sources were secured outside controlled areas, however, security risks resulted. For example, according to a DTRA official, field commanders complained to him after he arrived in July 2003 that protecting radiological sources in some field locations exposed their troops to increased risks of attacks. Estimates of how many soldiers were removed from their military duties to guard sources were not available, but we were told of instances in which troops were left guarding sources for several months. According to a DOE expert involved in DTRA's later collections, for example, a small group of troops had guarded sources at an oil drilling operation from May until early September 2003.

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### **While Military Commanders Improvised, DTRA Worked to Complete Preparations for Collecting Radiological Sources**

Between March and September 2003, as individual military commanders acted independently to collect or secure radiological sources when they discovered them, DTRA was working to fill gaps in preparations for the mission to collect and secure radiological sources. According to DTRA officials, they only gradually became concentrated on radiological sources as their initial focus on eliminating WMD diminished because stockpiles of chemical, biological, and nuclear weapons were not found. First, DTRA tried to establish much-needed guidance on which radiological sources to collect and where to consolidate them. According to a DTRA official, these and other issues had been discussed in prewar planning in late 2002, but guidance had not been issued. In July 2003, the DOD Office of Policy issued guidance on collecting and securing radiological sources for field commanders, which a DTRA official told us was all the policy guidance that DTRA needed. However, DTRA still needed to specify standards for health and safety as well as for transportation for its collection missions. According to the DTRA commander who set up collection operations in Iraq, DTRA used U.S. standards to ensure safety, but these standards were modified for the Iraq situation. For example, instead of using radioactive cargo placards on vehicles, which would be required by U.S. standards but might attract an insurgent attack, DTRA notified local military commanders along the route of its cargo when moving sources.

In addition, DTRA engaged in extensive, and ultimately unsuccessful, coordination within DOD to provide protection for its contractor at the Tuwaitha storage site through a contracted security force, but eventually obtained protection for its collection mission through coalition forces headquarters. This security force stood by for deployment to Iraq while the

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Department of Defense General Counsel, DOD's Central Command, and coalition military headquarters considered DTRA's request to arm this force. When this request was denied, DTRA decided in late 2003 that sufficient protection could be provided by military forces. For each collection mission, DTRA coordinated protection through the coalition forces headquarters, and could draw upon a military police platoon for a security escort.

Also, starting in March 2003, DTRA worked to coordinate arrangements with DOE for its assistance with collecting radiological sources. DOE was to send both technical experts from one of its national laboratories and shipping containers to Iraq for the collection effort. However, the arrangements were complicated by DOE's concerns about potential disposal of collected sources at its U.S. facilities and about the safety of DOE experts working in Iraq, as well as by communication difficulties. DOE had concerns about potential lawsuits arising from disposing of sources at its U.S. facilities. A DOE official told us that mislabeled or improperly packaged containers could lead to lawsuits if, for example, a source in a container was mislabeled and turned out to be a source that DOE's U.S. site was not licensed to possess, or if poor packaging led to radiation leakage in the United States. Consequently, DOE insisted that its technical experts be present when the sources were collected to identify and package them in Iraq, before they were transported to DOE's U.S. facilities, and DTRA agreed. When collections began, however, the danger of packaging sources in a hostile environment led DTRA to instead use temporary packaging in the field, followed by interim packaging at the Tuwaitha facility. The final packaging of the sources did not occur until May 2004 when DOE experts packaged them for shipment to the United States.

DOE also had concerns about the safety of its experts while overseeing the packaging of the sources in Iraq. Consequently, DOE proposed a contract provision that required DTRA to make every reasonable effort to evacuate DOE experts to a safe area if hostilities broke out. DTRA initially said it could not accept this contract provision because it did not control the troops who could provide such protection. Eventually the contract said that the DOE experts would not be exposed to unreasonable risks, but, according to a DOE official, the discussion about a military protection clause held up the contract for a couple of weeks.



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Unclear communications also affected the negotiations between DTRA and DOE. For example, according to a DOE official, at one meeting DTRA told DOE that DTRA either had shipping containers or could get them. But a few weeks later, DTRA asked DOE to provide the containers. Then communication about the number of containers needed became an issue because DTRA could not know the number or type of radiological sources that would need to be transported. Finally, the DOE expert preparing a contract proposal had difficulty defining the scope of services to be provided to DTRA because DTRA's plan was not clear to him. For example, he was not initially aware that the DOE experts would have only an oversight role and that DTRA was planning to use a contractor to do the collection work.

In addition, between March and September 2003, DTRA was also negotiating with its contractor to collect sources. This process was delayed in large part by the contractor's refusal to begin work until it obtained protection from legal claims for damages that could result from their work—that is, until they were given indemnification. Resolving this legal indemnification issue was delayed, in part, because DTRA contracting officials, who were uncertain about the infrequently used procedures for granting indemnification for work done under potentially hostile conditions, asked the contractor to provide what turned out to be unnecessary detail on the various damage scenarios that indemnification would cover. For example, one concern was that a convoy truck loaded with radiological sources would be fired upon, resulting in the radiological contamination of the area. In the end, DTRA decided that the indemnification language would be general and provided the contractor with indemnification in September 2003. Getting DOE experts working in Iraq was also delayed by indemnification issues, but their indemnification was settled earlier.

The contractor's acquisition of equipment, such as helmets and body armor, was also delayed, although not as long as the indemnification. The State Department approves the export of such U.S.-origin defense products to other countries under the International Traffic in Arms Regulations; approval took over 50 days in the case of one request by the DTRA contractor. According to a State official, this delay occurred despite procedures to expedite approval of export applications for Operation Iraqi Freedom because this particular approval required congressional notification, a requirement State could not meet until Congress returned to session. As a result of these delays, according to a DTRA official, DTRA's contractor wore helmets obtained from other countries because the

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helmets could be obtained sooner. In addition, the contractor, which was responsible for obtaining all needed equipment for the collection mission, initially lacked some equipment. According to a DTRA official, in one instance, the contractor did not allow its workers to perform a mission because of concerns that heat at the work site exceeded safety standards even though the contractor lacked the monitoring equipment to make that determination. According to the contractor's project manager, some necessary items were forgotten because the contractor team, which was being created for the first time, did not have an established standard equipment list for this mission.

Finally, DTRA's efforts to subcontract with Iraqis to help with collections also took time. In July 2003, because of security concerns, DOD's Office of Policy stopped Iraqis from the former Iraqi Atomic Energy Commission from independently collecting sources and rescinded their access to the secured bunker at Tuwaitha. By October 2003, DOD had decided to authorize, and encourage the use of, experienced Iraqis to locate sources, leave them secured in place when possible, and move unsecured sources to Tuwaitha, but this was an unsuccessful strategy for quickly increasing collection efforts. According to a DTRA official, DTRA tried unsuccessfully to get Iraq's Coalition Provisional Authority to fund Iraqis from the Ministry of Science and Technology to collect sources, but restrictions on the Coalition Provisional Authority's funds did not allow this. Eventually, DTRA arranged for its contractor that was collecting sources to subcontract some tasks to these Iraqis, but it took time to work out hiring, training, and procedures. For example, DTRA told us that subcontracting with the Iraqis was challenging because of difficulties with establishing banking procedures to ensure they got paid. By the time procedures were developed, training was finished, and the Iraqis began collection missions, it was February 2004, and DTRA's collection mission was in its final months.

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## DTRA Recovered or Left Secure in Place about 2,100 Radiological Sources, but the Number of Unsecured Sources Remaining in Iraq Is Unknown

Between September 2003 and May 2004, DTRA collected and secured about 1,400 radiological sources from sites throughout Iraq and left in place another 700 that it deemed secure. To further secure the most dangerous sources it had collected, in June 2004, DTRA and DOE together removed about 1,000 of the 1,400 previously collected sources from Iraq. Despite DTRA's efforts, however, the total number of radiological sources in Iraq remains unknown.

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## DTRA Collected and Secured about 1,400 Radiological Sources and Left about 700 Sources in Place after Judging Them to Be Secure

During approximately 140 collection missions conducted between September 2003 and May 2004, DTRA and its contractor collected about 1,400 unsecured radiological sources and inventoried and left in place about 700 sources that DTRA deemed secure.<sup>3</sup> To collect the 1,400 sources, DTRA identified their locations, traveled to those locations and found the sources, determined which sources to remove, transported those selected for removal to Tuwaitha, and secured them in a bunker there. According to DTRA officials, the collection missions were conducted safely, despite increasing insurgent hostilities and exposure risks associated with handling radioactive material.

About 450 of the 1,400 sources ultimately collected were removed from radioactive lightning arrestors. Unlike conventional lightning arrestors, radioactive ones use radiological sources to enhance the attraction of lightning. One or more sources sat in a metal cylinder at the top of each of the metal arrestor poles. Iraq had located these arrestors around its munitions dumps, military bases, and industrial complexes to protect them from lightning strikes. If these facilities were abandoned, the lightning arrestors—including the radiological sources—would have been easily accessible to looters. Coalition forces also found sources used in commercial activities, such as oil exploration, agriculture, and scientific

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<sup>3</sup>The count of approximately 700 sources left in place may be an undercount because devices with radiological sources, such as medical equipment, were counted as one source in DTRA's inventory, but could possibly include more than one source inside. Appendix I includes a discussion of the reliability of the data on sources.

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research. The uses of many other unsecured sources DTRA collected were unknown.

As figure 2 shows, DTRA collected unsecured radiological sources from locations across Iraq, from the north at the Turkish border to the south near Al Basrah. However, many of the sources were collected at the Tuwaitha Nuclear Research Center, located about 25 miles from DTRA's base camp near Baghdad International Airport.

**Figure 2: Sites from Which Unsecured Sources Were Collected**



Sources: GAO analysis of DTRA data; MapArt.

Upon arrival at locations, the radiological sources were sometimes not where DTRA and its contractor expected to find them. For example, on one mission, a radiological source from a lightning arrestor was found outside its metal cylinder under about 2 inches of debris. A DTRA official told us

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that looters apparently valued the metal lightning arrestor poles and copper wire inside them more than the radiological sources. At other times, DTRA and its contractor did not find the expected sources at all, which the contractor's mission reports sometimes attributed to faulty intelligence or looting.

If the radiological sources DTRA found were at an abandoned site or otherwise not under legitimate control of the Iraqis, DTRA collected them. For example, DTRA collected two large cesium sources from a factory that was largely abandoned. Similarly, if a lightning arrestor was damaged and the radiological source potentially subject to looting, DTRA would collect the source, according to a DTRA commander.

After collecting and packaging the radiological sources, DTRA secured them by transporting them to a protected bunker at Tuwaitha. According to DTRA officials, DTRA had found a bunker at Tuwaitha that had blast-proof doors. DTRA further improved the bunker's security, investing over \$1 million in improvements such as a chain link fence, gate, and security system. In addition, DTRA placed an armored unit outside the bunker to guard it. Figure 3 shows the protected bunker, under a mound of earth at the Tuwaitha Nuclear Research Center.

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**Figure 3: Bunker Where DTRA Secured Radiological Sources, Tuwaitha, Iraq**



Source: DTRA.

In addition to the about 1,400 radiological sources DTRA collected during its mission, DTRA left about 700 sources or source devices in place after it determined that they were properly secured and in the custody of

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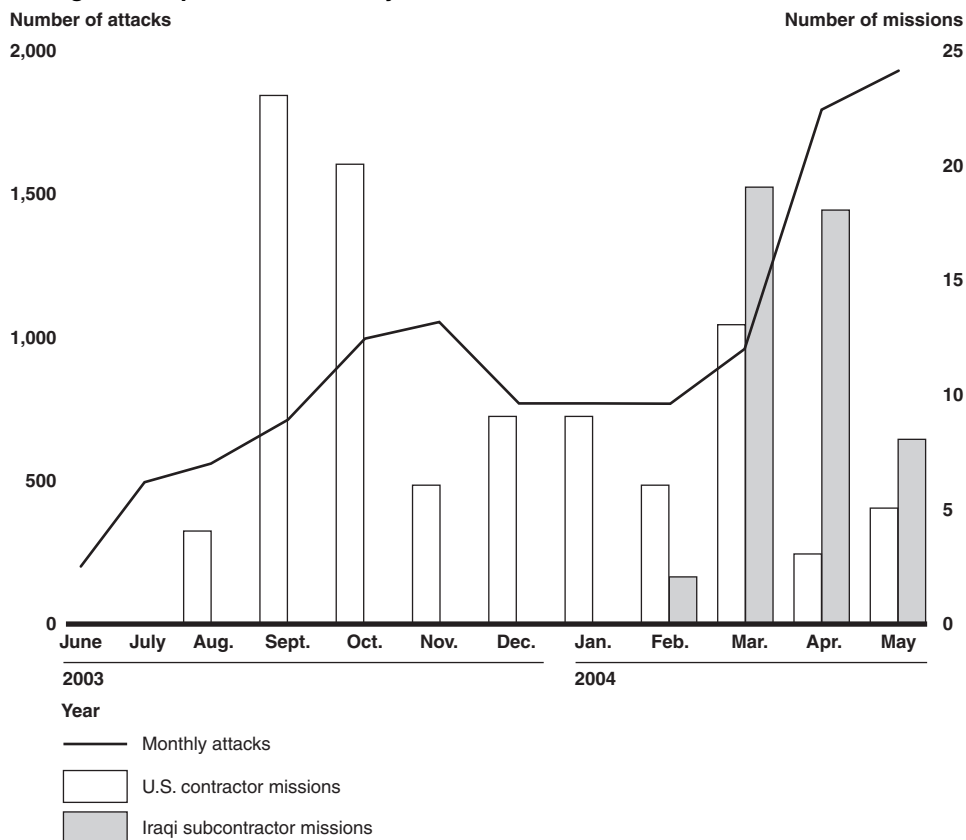
responsible personnel. According to DOD's guidance, coalition forces and DTRA could leave sources in place if they

- had medical, agricultural, industrial, or other peaceful uses;
- were properly contained and adequately secured; and
- were in the custody of trained personnel acting in a professional capacity, such as hospital staff or agricultural ministry personnel.

DTRA relied on this guidance to determine whether radiological sources it found could be left in place. In line with the guidance, when DTRA left sources in place, it recorded information such as location, use, and responsible institution or individual. Although the guidance did not elaborate on the standard for adequate security, a DTRA commander told us that the guidance was sufficient for DTRA to decide which sources were secure enough to be left in place.

DTRA's initial planning had assumed that the war would be over when its contractor went to work and, therefore, it would be collecting sources in a peaceful environment. Instead, with insurgent attacks continuing after major combat operations were declared over, the contractor's staff was consistently exposed to danger. In fact, insurgent attacks throughout Iraq significantly increased during the collection period and generally became more sophisticated, widespread, and effective (see fig. 4).

**Figure 4: Number of DTRA Contractor Missions and Number of Insurgent Attacks throughout Iraq, June 2003 to May 2004**



Source: GAO analysis of DOD data.

Notes: Attacks were against infrastructure, Iraqi Security Forces, civilians, or coalition forces.

The initial August 2003 missions were done only at Tuwaitha, as contractor staff waited for indemnity to be granted.

Although some areas were known as particularly dangerous for travel, attacks were unpredictable and occurred in many places. For example, according to a DTRA commander, during the first day of a mission in the Sunni triangle, the DTRA team came under mortar and sniper attack; during the second day, a helicopter involved in the mission experienced a rocket-propelled grenade attack. On another occasion, a DTRA convoy traveling through Baghdad was delayed by an explosion that left a burning vehicle in the road. Even within the relative security of the Tuwaitha Nuclear Research Center, DTRA's contractor reported hearing shots fired and found an improvised bomb on the road.



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To help decrease the danger, DTRA planned armed security for each of its missions. DTRA officers told us they assessed the potential danger associated with a particular mission and, if the anticipated security risk was higher than usual, they increased the size of the security force. For example, the number of vehicles with mounted weapons might be increased from two to four. When the risks seemed particularly high, missions were at times postponed. DTRA's security plan also specified the route of the convoy, so its location could be tracked with a communication system and a quick-response military team could be sent if needed. In addition, military troops sometimes secured the area around the source before the arrival of DTRA's contractor staff.<sup>4</sup>

Despite the attacks and the risk of exposure to radiation when collecting radiological sources, DTRA officials reported that the agency's missions to collect and secure radiological sources from September 2003 to May 2004 were conducted safely. According to DTRA officials, although the risks from hostilities were often greater than the risks from handling the radiological sources, DTRA's team did not sustain casualties during its collection missions. However, two contractor staff were injured—one seriously—in a mortar attack at DTRA's home base near Baghdad International Airport, but not during a collection mission. With regard to radiation exposure, the contractor's plan called for keeping the effect of individual exposures on a person as low as reasonably achievable and cumulative exposures over the mission below specified limits. Although six team members' hands or feet were contaminated with radioactive powder in one instance, according to DTRA and contractor officials, DTRA personnel and contractor staff remained under the cumulative standard throughout the overall mission.

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## DOE and DTRA Removed about 1,000 of the Most Dangerous Sources from Iraq

In March 2004, a National Security Council interagency policy committee that included DOD and DOE made the final decision to remove the most dangerous radiological sources from Iraq before the Coalition Provisional Authority handed power over to the interim Iraqi government at the end of June 2004. In the case of Iraq, DOE selected radiological sources for removal based on its criteria for determining which radioactive material posed a significant risk as dirty bomb material. Normally, DOE applies its criteria to individual sources in determining the risk. In this case, DOE

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<sup>4</sup>Iraqi subcontractors provided their own armed security during their missions to collect sources or document sources left in place.

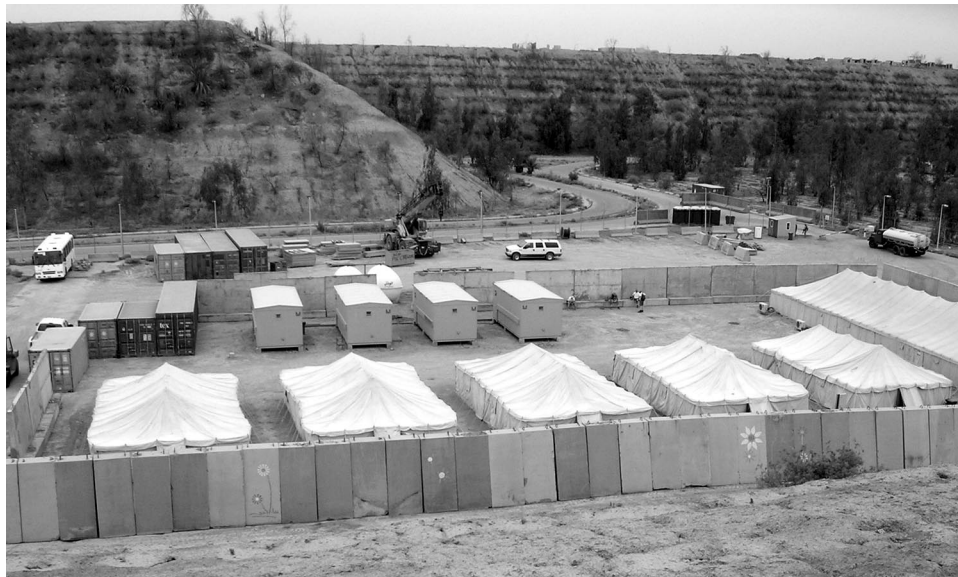
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consolidated some of these sources that, individually would not have met the risk criteria, but did meet the criteria once they were consolidated into waste shipment containers. According to a DOE official, using the criteria this way was warranted because the consolidation of the sources in the storage bunker created a potential public health risk or a target for theft, and Iraq had ongoing hostilities. As a result of applying its criteria in this way, DOE removed from Iraq about 1,000 of the 1,400 collected sources, accounting for a total of almost 2,000 curies, or over 99 percent of the radioactivity of the collected sources. The remaining radiological sources were generally small, accounting for a few curies of radioactivity in total.

After the National Security Council approved the removal mission in March 2004, final preparations for the mission were completed in about 2-1/2 months and the mission was finished in about 1 month. In late May 2004, DOE sent a team of 20 experts to Iraq to identify the type and radioactive strength of each collected source and package the sources for shipment to the United States. Given the escalating hostilities, DTRA hired a contractor to create a protected living area for the DOE team at the Tuwaitha site to reduce the exposure to attacks that would have resulted from traveling daily from a base camp to work at Tuwaitha. Figure 5 shows this living area and the concrete barriers placed at the perimeter.

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**Figure 5: Protected Living Area for DOE Experts at the Tuwaitha Nuclear Research Center**



Source: DOE.

DOE had difficulties coordinating with DTRA to get all the information needed to determine the number and types of shipping containers for the source recovery mission. DTRA constructed its inventory information on radiological sources collected at the Tuwaitha bunker to try to meet DOE's needs. However, DOE experts told us DTRA's information never fully met DOE's expectations. Specifically, DOE wanted comprehensive information on the type of isotope and radioactivity of the sources to determine the number and types of containers needed to safely ship the sources to the United States, as well as to do other planning tasks, such as an environmental impact assessment. According to DOE experts, DTRA could never provide, for example, complete and accurate information on radioactivity. Deciding that full information would not be forthcoming, the DOE experts overestimated radioactivity to ensure that DOE would bring enough containers from the United States to ship the radiological sources back safely.

Ultimately, DTRA and DOE were able to complete the task of analyzing, packaging, and loading the containers into trucks in about 25 days. DTRA and DOE successfully removed about 1,000 radiological sources and about 1.7 metric tons of low-enriched uranium from Iraq on June 23, 2004, 5 days

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before the transfer of power from the Coalition Provisional Authority to the interim Iraqi government. DTRA and DOE transported the sources in a heavily guarded convoy to a military airfield, and then departed from Iraq by military air transport. These materials were taken to a DOE site within the United States and are being evaluated for either reuse or permanent disposal. The disposal activities, funded by both DTRA and DOE at an estimated \$4.2 million, are expected to continue through late fiscal year 2006.

According to DOE officials, the final disposition of the radiological materials removed from Iraq may take longer and cost more than estimated because a legal determination is needed regarding whether the United States government owns the material or is merely serving as its custodian. Currently, DOE is storing the sources temporarily at one of its sites, but it is waiting for an interagency determination before deciding on how to dispose of the material. According to DOE officials, they raised this issue of ownership when the removal mission was being planned, but it was never resolved. As of mid-April 2005, DOE was prepared to start shipping sources to disposal facilities, but DOE disposal facilities are unwilling to take possession of the sources until ownership has been determined. Thus, DOE will hold the sources in temporary storage longer than anticipated, leading to increased storage costs.

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### An Unknown Number of Radiological Sources Remain Unsecured In Iraq

Although DTRA's effort to collect unsecured sources and leave secured sources in place identified about 2,100 radiological sources in Iraq, it is likely that other sources remain unsecured in Iraq for three reasons. First, the number and location of all sources in Iraq before the war were not known. Second, DOD did not search in all places in Iraq where sources might be found. Third, since the end of DTRA's mission in June 2004, other unsecured sources have been found, including at Iraq's borders.

The number of sources in Iraq prior to Operation Iraqi Freedom was not precisely known because the former government of Iraq did not maintain an inventory of radiological sources around the country. Around the time that major combat operations were declared over in May 2003, DOD received information on radiological sources in Iraq, but DOD and State officials told us that this information was not reliable for the purpose of locating and securing sources. For instance, DTRA officials told us that the information on sources and their locations was not precise because the names of locations were not clear, some sources were reported twice at the same location, and the information was sometimes outdated. However,

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DTRA used this information as a general guide to where sources might be found. Lacking more reliable information about the number and location of sources in Iraq at the beginning of the war, DTRA first collected sources discovered by coalition forces and then searched for other sources.

Because DOD and DTRA did not search all locations where radiological sources might be found, it is likely that unknown sources remain unsecured in Iraq. One DTRA official told us that DTRA was not tasked to search all locations where sources might be found. In addition, DTRA found evidence that sources had been taken from some locations before DTRA arrived. According to State officials, neighboring countries detected elevated radiation readings from cargo on trucks leaving Iraq starting at least by September 2003, and some of these trucks were turned back at the border. Although many of these incidents involved radioactively contaminated scrap metal, some cargo included sources. State officials said they did not know where the trucks and their cargo went after returning to Iraq, but the State Department sought to improve coordination with neighboring countries to manage these border incidents. Because of the lack of a complete search for sources in Iraq, officials of the interim Iraqi government told us that it intended to perform a more comprehensive search.

Finally, sources continued to be found in Iraq and at its border after DTRA completed its collection and removal mission in June 2004. In addition, according to State officials, radioactive materials, primarily contaminated scrap metal but also some sources, continued to be detected on trucks leaving Iraq after that time. Separately, in August and September 2004, for example, a country bordering Iraq found radioactive sources on trucks leaving Iraq. Also, a U.S. Army officer responsible for nuclear, biological, chemical, and radiological issues in Iraq told us that, in at least one case, an unsecured source or sources from lightning arrestors had been discovered by U.S. troops since the end of DTRA's mission in Iraq.

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## The United States Helped Create an Iraqi Agency to Regulate Sources, but Future Assistance Is Uncertain

The Department of State supported the Coalition Provisional Authority in creating an independent Iraqi agency, the Iraqi Radiological Source Regulatory Authority (IRSRA), to regulate sources, and State and DOE are assisting the new agency by providing equipment, technical assistance, and funding. However, the evolving Iraqi government—including the transitional government formed after the January 2005 election and the permanent government to be formed through an upcoming election—and

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the ongoing insurgency are creating uncertainties for both IRSRA and U.S. assistance.

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## State Facilitated the Creation of an Iraqi Radiological Source Regulatory Agency

Before the transition to the interim Iraqi government in June 2004, State's Bureau of Nonproliferation encouraged the creation of IRSRA. It saw this effort as an extension of U.S. support for international standards for safe and secure management of radiological sources, such as those coordinated and administered by IAEA. Specifically, IRSRA will further several U.S. foreign policy goals. First, an Iraqi agency that controls radiological materials will promote the health and safety of Iraqis, as well as provide the capability for Iraq to meet international commitments for the safe and secure management of radiological sources. Second, an effective Iraqi agency for regulating sources will promote U.S. national security goals by decreasing the likelihood of terrorists trafficking in or deliberately releasing radioactive material. Third, the new agency will employ former Iraqi scientists who might otherwise seek employment with terrorists or countries seeking WMD expertise.

State officials enlisted Iraqi officials within the Coalition Provisional Authority to support the formation of IRSRA. In particular, State negotiated with the Minister of the Ministry of Science and Technology (MOST), who played a leading part in supporting the creation of IRSRA. The Minister agreed to allow IRSRA to regulate Iraq's radiological sources, while MOST will retain ownership and control of secured nuclear and radiological materials at research facilities. The Minister also agreed to continue DTRA's efforts to find and collect unsecured radioactive sources, but under contract with IRSRA. The Minister further agreed that IRSRA would be legally and financially independent—a key element in State's plan for IRSRA. According to State officials, IRSRA was designed as an independent agency to avoid conflicts of interest. While Iraqi ministries, such as the Ministry of Health, the Ministry of Oil, and MOST, own or track many of the radiological sources in Iraq, their activities will be subject to the regulation of IRSRA, which will inspect, inventory, and regulate all sources in Iraq.

In addition, through discussions with Iraqi and Coalition Provisional Authority officials, State helped draft the 2004 budget plan and the organizational structure of IRSRA. The plan included providing \$7.5 million to the new agency within the Iraqi Government Budget developed by the Coalition Provisional Authority for fiscal year 2004. These funds are to be spent on salaries, the search for sources, assistance from U.S. experts, office space, and facility security. State's organizational plans for IRSRA

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identified the departments and staffing needed to accomplish agency tasks, such as regulating radiological sources in use, managing unwanted radiological sources, and creating regulations in cooperation with IAEA and other experts. In addition, to further State's efforts, DTRA trained Iraqis to collect, store, and secure radiological sources during its own collection operations and subsequently provided Iraqis with an upgraded secure storage facility and its inventories of sources removed from the country, left at the facility, or identified around Iraq.

In June 2004, the Coalition Provisional Authority issued an order establishing IRSRA.<sup>5</sup> According to the order, IRSRA will promulgate and enforce regulations to allow for beneficial uses of radioactive sources, provide for adequate protection of humans against the harmful effects of radiation, and ensure the safety and security of radiological sources. For example, it will require hospitals, universities, oil production facilities, and others to obtain licenses to possess radiological sources, which will enable the agency to maintain records on radiological sources in the country. Licensees will be obliged to follow procedures and regulations that define how they will secure, inventory, and work with their licensed radiological sources. In addition, IRSRA is responsible for collecting unsecured sources when they are found, creating radiation health and safety criteria, and researching the possibility of constructing a low-level radioactive waste disposal facility in Iraq. The Coalition Provisional Authority disbanded shortly after it created IRSRA, but its order will continue to have legal authority in Iraq until it is amended or changed by the Iraqi government, according to State officials.

By the summer of 2005, State officials told us, they perceived signs that IRSRA was beginning to function and was becoming more established as part of the Iraqi government. For example, IRSRA had started drafting regulations and was requiring ministries to notify it about their radiological sources. Moreover, it had an appointed chairman, developed a budget, and obtained its own building and office space, as well as about 50 staff.

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<sup>5</sup>Coalition Provisional Authority Order Number 72, "Iraqi Radioactive Source Regulatory Authority," CPA/ORD/10 June 2004/72 (June 10, 2004).

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## State and DOE Are Providing Assistance to the New Regulatory Agency

In addition, State and DOE are assisting IRSRA by providing equipment, facilitating technical assistance, and providing funding. First, to help the Iraqis collect unsecured sources under the direction of IRSRA, State has initiated an effort to transfer to Iraqi agencies equipment that had been purchased by DTRA to collect sources. This equipment includes radiological handling, measurement, and protective equipment, such as radiation meters, respirators, and protective clothing. According to State officials, preparations for the transfer of this equipment began in mid-2004; as of early 2005, State and DOD were discussing how this equipment would be transferred to the Iraqis. In the meantime, this equipment has been made available to MOST for collecting radiological materials.

State is also facilitating technical assistance. With funding and logistical support from DOE, State coordinated several meetings in Amman, Jordan, in December 2004 to provide IRSRA personnel training by IAEA staff and to help them draft an action plan for regulating radiological sources. IRSRA's action plan is based on the IAEA Model Project program, through which IAEA is helping about 100 developing countries establish effective regulatory controls for radioactive sources. Under the Model Project program, developing countries adopt action plans to help them establish or strengthen radiation protection infrastructures in order to meet international standards and to follow the guidance in the IAEA Code of Conduct on the Safety and Security of Radioactive Sources.

Under the action plan, which was finalized in March 2005 meetings in Washington, D.C., IRSRA will establish a regulatory framework; work to control radiation exposure in occupational, medical, and public settings; and set up emergency preparedness and response capabilities. IAEA plans to provide expert assistance to help IRSRA meet these goals. In addition, to help IRSRA find unsecured sources, IAEA will offer radiation detection equipment and training in border control. To complement the action plan, IAEA is sharing with IRSRA a computer program designed to track information about radiological sources' locations, radioactive strengths, licensing, and responsible parties. IRSRA intends to use this program to manage information it gathers on Iraqi radiological sources.

In addition, in coordination with IRSRA's action plan, DOE is offering IRSRA technical assistance to help ensure the security of radiological sources. For example, DOE plans to provide experts to review draft Iraqi laws and regulations for their relevance to security. DOE also plans to assist IRSRA with facility upgrades to address security vulnerabilities of sources used for medical, industrial, or other peaceful purposes. Moreover,



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in conjunction with IAEA, DOE may also offer field equipment and training workshops for inspecting the security of sources.

Finally, to financially support IRSRA's action plan, State intends to use \$1.25 million from its Nonproliferation and Disarmament Fund, which provides funding for projects to prevent the spread of WMD. State plans to provide part of these funds to IAEA for training and other assistance to IRSRA, including an IAEA review of Iraq's draft laws and regulations. State plans to also use the funds to purchase a specially equipped vehicle that can be driven through neighborhoods to detect unsecured radiological sources. In addition, State plans to hire a contractor to coordinate security matters with coalition forces to minimize the risk of attacks, while the Iraqis are working to control sources.

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### **Iraq's Political Transition and Continuing Hostilities Are Creating Uncertainties for IRSRA and U.S. Assistance**

According to State officials, because of uncertainties associated with the continuing formation of the Iraqi government, State will have to monitor Iraqi efforts to ensure the continued growth and success of an independent, competent, and sustainable regulatory authority for the control of radioactive sources and materials. According to these officials, the ongoing formation of the Iraqi government could affect the future of IRSRA in several ways. First, potential changes to the government's organization or personnel could affect IRSRA's funding and enforcement powers. For example, the transitional government formed from the January 2005 election chose new government ministers—including replacing the Minister of Science and Technology, who had aided the formation of IRSRA. In addition, according to State and Iraqi officials, in early 2005, the Iraqi government froze all new expenditures until the transitional government takes action on the budget. Therefore, the funds for the IRSRA contract with the ministry to search and recover sources were not available. However, State officials told us the collection missions are important for public safety and would go forward in anticipation of later payment. Finally, the Iraqi government will have to enact the laws and regulations that IRSRA will be drafting under its action plan.

In addition, State officials told us that the evolving relationship of the northern Kurdish-controlled territories with the rest of Iraq could affect IRSRA's operation. Before Operation Iraqi Freedom, the Kurds enjoyed some independence from the former Iraqi regime, and State officials told us that this partial independence has continued. IRSRA and Kurdish officials will be discussing whether and how IRSRA will operate in Kurdish-controlled territory. According to the Chairman of IRSRA, Kurdish

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officials are likely to accept a proposal to create a branch office of IRSRA in Kurdish territory. This proposed office would be staffed by Kurds, but IRSRA would provide equipment, training, and protocols.

Finally, the continuing insurgency is hindering IRSRA's ability to find and collect unsecured radiological sources as well as the ability of the United States to provide assistance. Iraqi and State officials are concerned that insurgents will target Iraqis who are seen associating with coalition forces on their official duties. For example, a MOST official told us that Iraqi workers entering a U.S. military base to collect sources would likely be ambushed by insurgents upon leaving the military base. The hostile environment also impairs the ability of the United States to provide certain kinds of assistance. For example, DOE has decided not to send its experts into Iraq because of the ongoing hostilities, according to a DOE official. However, State and DOE are devising ways to assist without going to Iraq, such as organizing training for Iraqis at sites outside of the country.

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## **DOD Has Not Assessed Its Source Recovery Effort, but DOE Is Considering Lessons Learned**

Although DOD has assessed its overall WMD mission in Iraq, the agency has not assessed its narrower mission to collect and secure radiological sources. In contrast, DOE has considered actions to address specific lessons learned from its experience in removing radiological sources from Iraq.

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## **DOD Has Assessed Its Broader WMD Mission but Has Not Focused on the Radiological Sources Effort**

DOD asked its National Defense University (NDU) to study DOD's overall mission to find and eliminate WMD in Iraq, determine what lessons could be learned from it, and recommend improvements. The resulting report stated that DOD had not sufficiently planned and prepared for the WMD mission; had shortfalls in the needed transportation, military security, and logistics resources; and had operational difficulties arising from the extensive looting, public disorder, and hostile security environment. The report recommended that DOD develop the capability to quickly eliminate WMD in hostile environments and establish a permanent organization for eliminating WMD. (See app. II for more information on the report.) DOD is responding to the report, in part, by seeking stronger planning and capacity for eliminating WMD, which a DOD Joint Staff officer told us would include the elimination of radiological materials. Specifically, DOD's Strategic Command, which was assigned responsibility for this planning in January

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2005 by the Secretary of Defense, will first determine the needed capacities.

The NDU report did not, however, offer any observations or recommendations regarding the narrower mission to collect and secure radiological sources in Iraq, in part because this was not the main focus of the original WMD mission in Iraq. Nevertheless, the author of the NDU report and a DOD Joint Staff officer told us that DOD's efforts to solve overarching issues with its preparation for eliminating WMD will also address problems experienced with the mission to collect and dispose of radiological sources.

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## DOE Is Considering Lessons Learned from Removal of Iraqi Radiological Sources

DOE asked its contractor at one of its national laboratories to analyze the removal mission to identify lessons learned and recommend improvements. The resulting analysis highlights the lessons that timing of funds and availability of equipment hindered rapid preparation for the mission.<sup>6</sup> First, the contractor noted that the short amount of time between when the project was funded and when the team left for Iraq meant that almost every preparation task had to be conducted in emergency mode. DTRA funding became available in March 2004 after the National Security Council approved the mission, leaving less than 2-1/2 months for the team of DOE experts to complete all preparations in the United States. Needed preparations included establishing a liaison with DTRA in Iraq; determining the list of sources to be removed based on DTRA's inventory; developing safety and handling procedures for those specific sources; completing safety assessments for those procedures; determining the need for, and obtaining, a National Security Exemption to bring some of the radioactive sources to the United States; recruiting the remainder of the team members; cross training team members to be able to complete another member's work if necessary; getting the DOD training and authority necessary for the team to enter Iraq; obtaining contractor indemnification for the mission; preparing a U.S. staging facility for equipment; and procuring, testing, and packaging such equipment as protective clothing, tents, and communication equipment.

In addition, according to the contractor, preparation for the mission was almost critically delayed by difficulties in acquiring containers for

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<sup>6</sup>The analysis does not address DTRA's contracting of DOE experts for the collection mission, which was conducted before the joint DOE and DTRA removal mission.

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transporting the radiological sources. DOE and its laboratories did not have a sufficient number and variety to meet the projected needs of the removal mission—a shortfall that proved challenging to overcome in time to successfully conduct the mission. Specifically, certain special containers could not be procured in time from U.S. domestic suppliers as a result of shortages. Consequently, DOE arranged to lease four of these special containers from a foreign company by agreeing to provide the company blanket indemnity with up to approximately \$1 billion in liability coverage in case of an accident involving the containers. The containers arrived a few days before the team and its equipment were to leave for Iraq. According to the contractor, if DOE's negotiations to get the special containers had failed, the removal mission would have been delayed, and it is likely that many radiological sources with high radiation levels would not have been able to be removed.

To support timely action in future removal operations, the contractor recommended that DOE seek ways to ensure the existence of advanced funding and maintain a small fleet of versatile containers. DOE officials told us they saw merit in having a way to quickly fund future missions, although their agency's funding—used solely for the disposal rather than the removal of the sources—was available early enough in the case of Iraq. With regard to maintaining a reserve of containers and other equipment, the officials solicited proposals and cost estimates from their national laboratories and have determined they cannot pursue this option given current budget constraints.

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## Conclusions

Because DOD has not comprehensively reviewed its experiences in collecting and securing radiological sources in Iraq, its current efforts to improve its preparations to secure or destroy WMD in future missions will not benefit from important lessons learned from its radiological source mission. Reviewing such experiences and identifying lessons learned would help prepare for any future missions involving similar circumstances.

In addition, DOD's lack of readiness to quickly collect and secure sources after the war began indicates that additional planning and preparation could have been completed in advance of the mission. Specifically, DOD had not

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- planned to collect sources in a hostile environment and thus had to act during the operation to integrate the objective of collecting and securing sources with military combat objectives;
  - established criteria to determine which radiological sources needed to be collected, which were being properly used and thus could be left in place, and which posed minimal threat and thus did not need to be collected;
  - specified health and safety standards for handling, securing, transporting, and disposing of sources;
  - specified the organization responsible for collecting and securing sources in Iraq until shortly before the invasion of Iraq, nor established agreements within DOD regarding issues such as using armed private security forces to protect contractors involved in collecting and securing sources;
  - established agreements or points of contact with DOE to determine the support that DOE could provide, including the type of expertise, equipment, and disposal facilities;
  - identified and addressed the legal and contractual issues associated with using private contractors to assist in collecting and securing sources, including using such contractors in hostile environments; and
  - established guidelines to utilize the skills and address security concerns associated with the use of Iraqi radiological experts.

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## Recommendations for Executive Action

To ensure that the types of problems experienced with the planning and preparing for securing Iraqi radiological sources do not recur, we recommend that the Secretary of Defense comprehensively review DOD's experience for lessons learned for potential future missions.

In addition, to ensure that planning and preparing for potential future missions is carried out in advance, we recommend that the Secretary of Defense provide specific guidance for collecting and securing radiological sources, including

- integrating the objective of collecting and securing radiological sources with military combat objectives, including specifying how security

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protection, if needed, would be provided to the organization with responsibility for managing radiological sources and whether combat troops would be required to secure sources and provide protection for operations to collect and secure radiological sources;

- determining criteria to define which radiological sources (1) are of greatest risk and should be collected, (2) are being properly used and secured and thus can be left in place, and (3) pose minimal threat and thus do not need to be collected;
- specifying the health and safety standards, after considering how U.S. standards for handling, securing, transporting, and disposing of radiological sources were modified for use in Iraq;
- officially designating the organization responsible within DOD for collecting, securing, and disposing of sources and establishing agreements between that organization and other DOD organizations that may be involved with these efforts;
- establishing agreements and points of contact with DOE and other federal agencies, as needed, to specify the coordination, technical expertise, equipment, and facilities that may be needed to collect and secure sources in, or remove them from, a foreign country;
- identifying under which circumstances and for what purposes DOD will contract with private firms to conduct activities to collect and secure radiological sources, and address legal and contracting issues to ensure the timely use of contractors; and
- establishing guidelines concerning the role of radiological experts from the country where sources need to be collected and secured.

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## Agency Comments and Our Evaluation

We provided the Departments of Defense, State, and Energy with draft copies of this report for their review and comment.

DOD agreed with four of our recommendations, partially concurred with two, and did not concur with two. DOD stated that it had previously addressed a number of issues identified in the recommendations and is currently addressing the others. DOD also stated that the draft report did not adequately address those efforts of the Nuclear Disablement Team (NDT) during the earlier operations in Operation Iraqi Freedom involving

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radiological source recovery operations. DOD stated that the focus of the draft report appeared to be largely on the elimination phase of the operation and that it accepted our recommendations in that area. Our report assessed all phases of DOD's planning and preparing for this mission, including the experiences of the NDT and its decision to forgo collecting sources because it lacked the proper equipment. We believe our report was appropriately focused on the elimination phase because that was when most sources were collected from around Iraq.

DOD partially concurred with our recommendation to develop lessons learned, indicating that lessons learned have been developed from the NDT's experiences for the phase of the operation before DTRA began to collect sources. That effort is in line with our recommendation, but unless DOD completes a more comprehensive review, we are concerned that it will miss the experience of all relevant DOD organizations and the full range of lessons learned.

DOD also partially concurred with our recommendation about integrating the objective for securing radiological sources with military combat objectives, saying that this recommendation applies only to the later phase involving DTRA's work. However, we disagree that our recommendation applies only to DTRA's work. As our report points out, there were problems with integrating the mission of collecting and securing sources with military combat objectives during the NDT phase of operations as well. Specifically, our report notes that during the NDT phase of operations, military commanders were left to make ad hoc decisions about recovering and securing sources, including using combat troops to guard sources. DOD's response to this recommendation also noted problems DOD encountered in obtaining support from DOE. We believe our report adequately discusses problems DOD encountered in obtaining DOE assistance in collecting radiological sources—these problems stemmed from the lack of advanced coordination that our report recommends DOD resolve prior to any future missions. DOD also commented that our recommendation demonstrated a lack of understanding by suggesting that combat troops should be involved in handling radioactive materials. We revised our recommendation to more clearly indicate that DOD should decide whether combat troops would again be required to secure sources and protect missions to collect sources, as they did in Iraq.

DOD did not concur with our recommendation concerning health and safety criteria and suggested that our recommendation was too broad and ill defined. DOD's rationale for this response is not clear. First, DOD said

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that guidance is and always has been available. Then, DOD said that since Operation Iraqi Freedom was the first time in recent history that a capability was developed and deployed to counter a WMD threat, no unit level standard operating procedures existed. DOD then said that the NDT did develop procedures to “address all these issues” and that the NDT continues to work to develop changes to existing regulations to “address all these particulars.” We have clarified our recommendation to indicate that DOD, in specifying health and safety standards, should consider how U.S. health and safety standards were modified in Iraq during the mission to collect and secure sources. We continue to believe that DOD should fully implement our recommendation.

Finally, DOD did not concur with our recommendation to establish the organization responsible within DOD for collecting, securing, and disposing of sources. DOD said that it had already identified this organization as the NDT and that the Commander of Strategic Command has overall responsibility for issues related to WMD, a subset of which is collecting, securing, and disposing of sources. However, based on a conversation we had in August 2005 with a DOD Joint Staff officer, Strategic Command has not yet issued its plan for combating WMD, in which the specific organization responsible for collecting, securing, and disposing of sources will be officially designated. DOD’s complete comments are reprinted in appendix III.

State suggested clarifications of its current outlook for U.S. assistance to Iraq for radioactive source regulation and the reason for the delay in State’s approval of export licensing, which we have incorporated into this report. Separately, State provided technical comments, which we incorporated as appropriate. State’s written comments are reproduced in appendix IV.

DOE had no written comments on the report but did state that it will work with DOD to determine criteria to define which radiological sources are of greatest risk.

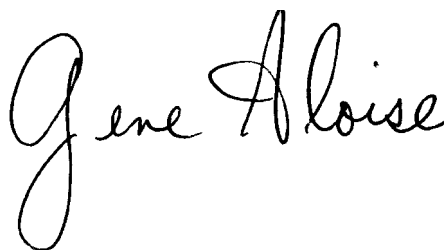
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We are sending copies of this report to the Secretary of Defense, the Secretary of Energy, the Secretary of State, and interested congressional committees. We will also make copies available to others upon request. In addition, this report will be available at no charge on the GAO Web site at <http://www.gao.gov>.



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If you or your staff have any questions about this report, please contact me at (202) 512-3841 or [aloisee@gao.gov](mailto:aloisee@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix V.

A handwritten signature in black ink that reads "Gene Aloise". The signature is written in a cursive style with a large, looped initial "G".

Gene Aloise  
Director, Natural Resources  
and Environment

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# Scope and Methodology

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This report (1) assesses Department of Defense (DOD) readiness to collect and secure radiological sources in Iraq from the start of the 2003 war, (2) presents information on the number of radiological sources the Defense Threat Reduction Agency (DTRA) secured by the time of the June 2004 transition to the interim Iraqi government, (3) describes the assistance the United States has provided, and plans to provide in the future, to the Iraqi government to help regulate radiological sources in Iraq, and (4) examines DOD and Department of Energy (DOE) actions to assess their experiences in Iraq and apply any lessons learned to possible future radiological source collection missions.

For our first objective, to assess DOD's readiness to collect and secure radiological sources, we reviewed planning efforts before the war began in March 2003; concerns and efforts regarding radiological sources before DTRA began its collection mission in late 2003; relevant policy guidance; and DTRA's preparations to collect unsecured sources in Iraq. To understand DTRA's prewar plans, we interviewed a division chief of DTRA's Combat Support Directorate, who prepared these plans, and other DOD officials involved in planning before the war. For concerns and efforts before DTRA began to collect sources, we interviewed the Nuclear Disablement Team commander and other team members and reviewed an unclassified report on their activities in Iraq. We also interviewed the senior chemical officer for the commander of coalition land forces who secured radiological sources in Iraq. For policy guidance, we examined two DOD policy memorandums on radiological sources in Iraq and interviewed DTRA and DOD officials involved with the development of the guidance. For specific preparations to collect sources, we interviewed DTRA officials who prepared for the mission, including the two commanders who sequentially prepared for the mission in Iraq and the DTRA director responsible for the mission. We also reviewed the contract between DTRA and its contractor, and the contract agreement between DTRA and DOE. We interviewed DTRA officials who developed and managed the contract, the DOE official who facilitated the development and execution of the contracts, and contractor's project managers and staff.

For our second objective, to present information on the number of radiological sources secured, we assessed the data reliability of five inventories of radiological sources in Iraq and summary data about the sources' radioactivity. We asked those responsible for creating or maintaining the inventories a series of questions focused on data reliability, covering issues such as internal control procedures and the accuracy and completeness of the data. Our assessment follows:

1. We assessed the reliability of an inventory of the location, number, and type of sources in Iraq at the beginning of the war that DTRA received during its mission, and based on our work, we determined that these data were not sufficiently reliable for the purposes of this report to specify the number of sources at the beginning of the war. Because the source of this information is sensitive, we did not report its origin. DTRA officials told us they found this data to be unreliable, but it did match well with sources found at some sites. For our assessment of the data, we reviewed the inventory and interviewed key DTRA and contractor staff who worked with this information. We found major discrepancies, including duplications resulting in multiple counts of the same sources and evidence of incomplete data. Therefore, we did not use this data in our report.
2. We assessed the reliability of a May 2004 inventory of sources collected in Iraq that DTRA had created before the removal mission, and we determined that, for the purposes of this report, the inventory was not sufficiently reliable to ascertain the number and types of sources, but the inventory was reliable enough to identify the general locations of places where sources were found. To assess this data, we obtained responses to questions regarding data reliability by interviewing key DTRA and contractor staff who worked with this information. We also corroborated the data whenever possible with DOE experts and DOE's inventories of collected sources taken to the United States and those left in Iraq. DTRA's contractor staff told us they were unable to open some containers and counted each of them as one source. However, when DOE experts opened these containers, they found that some containers held multiple sources, increasing the count of sources from about 700 sources to about 1,400 sources. Also in the DTRA inventory, the type of radiological material was misidentified for some sources, according to DOE experts and documents. Therefore, we reported the number of sources based on DOE's work.
3. We assessed the reliability of DOE's inventory of the approximately 1,000 sources collected in Iraq and taken to the United States, and determined that these data were sufficiently reliable for the purposes of this report. To assess this data, we obtained responses to questions regarding data reliability by interviewing key DOE experts who worked with this information. We were told that the number of sources taken to the United States may be a close approximation, due to some instances where DOE experts relied on counts by DTRA, and therefore we reported them approximately.

4. We assessed the reliability of a DOE inventory of the approximately 400 sources collected in Iraq and remaining in Iraqi custody, and determined that these data were sufficiently reliable for the purposes of this report. To assess this data, we obtained responses to questions regarding data reliability by interviewing key DOE experts who worked with this information. They told us that the number is a close approximation, and therefore we reported it approximately.
5. We assessed the reliability of a DTRA inventory of the approximately 700 sources determined to be secured and in use in Iraq, and determined that these data were sufficiently reliable for the purposes of this report. To assess this data, we obtained responses to questions regarding data reliability by interviewing key DTRA and contractor staff who worked with this information. DTRA's contractor staff told us they did not open the devices that contained sources and, therefore, depended on the labeling and documentation of the devices, if available, to record information about their number, type, and radioactive strength. The inventory assumed that there was one source per device, but contractor staff told us that some of these devices may have had multiple sources, and therefore we reported them approximately.

To report the radioactivity of sources collected in Iraq and taken to the United States or remaining in Iraq, we depended on information provided to us in a DOE summary of the sources removed from Iraq, and determined that these data were sufficiently reliable for the purposes of this report. We discussed this data with DOE experts who worked with this information. They told us that the radioactivity of the sources taken from Iraq was accurate to within 10 percent to 20 percent of the total reported, and we therefore reported the total approximately. They also told us that the radioactivity of the collected sources remaining in Iraq was somewhat more accurate because these less-radioactive sources could be handled and measured individually, but that the total was an approximation. Therefore, we reported the total approximately.

To present information on the missions performed to collect and remove radiological sources, we examined the available contractor reports on the approximately 140 missions to find and collect sources in Iraq, as well as contractor reports on the mission to remove sources from Iraq. We interviewed DTRA officers and staff and DOE experts who accompanied these missions. We also interviewed contractor staff who performed this mission and the contractor's project manager for the mission in Iraq.

For our third objective, to describe U.S. efforts to help the new Iraqi government regulate sources, we examined Department of State planning documents and a Coalition Provisional Authority order to establish an Iraqi agency to regulate radiological sources. We discussed assistance, as well as uncertainties and challenges for assisting Iraq, with officials from State and DOE. In addition, we discussed DTRA's actions to support State's effort to assist Iraq with DTRA officials. We also discussed efforts to secure radiological sources with the Chairman of the Iraqi Radiological Source Regulatory Authority during his visit to Washington, D.C., in March 2005; at the same meeting, we discussed efforts to search for unsecured sources with an Iraqi program director from the Ministry of Science and Technology. We interviewed State and DOE officials about their current and intended contributions to the action plan drafted in December 2004 and further discussed in March 2005 meetings.

For our fourth objective, to describe what DOD and DOE have done to learn from their experience in Iraq, and how such lessons might be applied in the future, we interviewed DOD and DOE officials about their efforts to document lessons learned. We also reviewed a February 2004 National Defense University study of lessons learned from the mission to eliminate weapons of mass destruction (WMD), and discussed the study with its author. We discussed DOD's work to assess its capability to interdict and eliminate WMD materials, including radiological sources, and reviewed the DOD memorandum initiating this effort, and held discussions with DOD planning officials. We also examined DOE's preliminary analysis of lessons learned with DOE officials and interviewed the DOE expert who prepared it.

Because of the continuing hostilities, we did not travel to Iraq. We performed our work from May 2004 through August 2005 in accordance with generally accepted government auditing standards.

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# The National Defense University Study

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The Center for the Study of Weapons of Mass Destruction (WMD Center) at the National Defense University (NDU) has developed lessons and recommendations for WMD elimination operations, as the result of the Department of Defense's (DOD) request for this study in late 2002. The WMD Center conducted meetings with DOD and interagency personnel to discuss elimination operations, and also examined prewar planning and its execution in Iraq. In February 2004, the WMD Center hosted a conference with those who had been engaged in the elimination mission in Iraq to identify lessons learned and ways to institutionalize WMD elimination capacity for the future. Major findings and key recommendations from the study were subsequently published in an NDU report.<sup>1</sup>

The NDU report suggests three wrong lessons from the Iraq experience that should be avoided to arrive at the correct lessons. A first wrong lesson is that Iraq is a rare situation. According to the report, since most of the United States' potential adversaries have actual or suspected WMD capabilities and terrorists appear committed to acquiring WMD from weak, poor, or failed states, the U.S. military will likely confront WMD elimination missions as often as it engages in war. A second wrong lesson is that the failure of intelligence on WMD explains all of the failures of the WMD elimination mission. While faulty intelligence contributed to problems, the Iraq experience revealed substantial problems with DOD's ability to eliminate WMD, including problems in planning, training and exercises, capabilities, and resources. A third wrong lesson is that elimination should not be a DOD mission, but rather should mostly be done by civilian or international organizations with the proper expertise after the military minimally secures WMD sites. Instead, the Iraq experience suggests that the U.S. military must quickly attend to finding, securing, and disposing of WMD to prevent the loss of information about WMD programs and the potential dispersal of WMD occurring in the chaos following an invasion.

Even though WMD was not found, the report suggests that the Iraq experience reveals that major improvements must be made if the United States is to succeed in a possible future WMD elimination mission. For example, according to the study, DOD had not sufficiently planned and prepared for the mission to locate, secure, and dispose of WMD, in part, because DOD only began to rapidly plan for operations and develop

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<sup>1</sup>Rebecca K.C. Hersman, "Eliminating Adversary Weapons of Mass Destruction: What's at Stake?" (occasional paper, National Defense University Press, Washington, D.C., December 2004).

capacities for the elimination mission in late 2002. Before the end of major combat operations, the study observed that the teams searching for WMD experienced important operational problems. One key problem was that operations had to be adjusted because existing intelligence was directing teams to suspected sites that proved to have little evidence of WMD activity. Operations thus shifted from the expected focus on WMD to a more geographically dispersed investigation of potential WMD sites. Operations also shifted toward gathering information about WMD programs, but most teams lacked sufficient training and expertise for retrieving important information contained in documents and computers as well as for interviewing Iraqis who might be knowledgeable about WMD programs. Further, the organization responsible for searching for WMD was dependent on other military commands for capabilities such as transportation, logistics, communications, linguists, and security. When these other military commands experienced competing priorities for these capabilities, shortfalls for these capabilities occurred and the search for WMD was delayed. Additionally, the extensive looting, public disorder, and uncertain security environment made the search for WMD complex, resource intensive, and dangerous.

Based on the Iraq experience, the NDU report recommended that DOD develop and maintain the capability to quickly eliminate WMD in hostile environments. More specifically, the report included eight key recommendations: (1) DOD should institutionalize the WMD elimination mission, embedding it into the planning and budget process along with other tasks undertaken in combat operations. (2) To have a clear organization responsibility, DOD should create a standing military organization that is ready to perform the WMD elimination mission, including in a combat situation. Although this organization should be military, it should develop strong links with interagency and international partners, civilian experts, and the private sector. (3) DOD should be prepared to conduct this mission in an inhospitable environment and as quickly as possibly—concurrently with major combat operations, if necessary. (4) Elimination planning must assume imperfect intelligence on WMD, operations should be prepared to respond to emerging intelligence, and intelligence sharing must be improved. (5) To test plans as well as identify and address problems with procedures, the organization with WMD elimination responsibility should conduct training and exercises. (6) Rather than focusing on WMD sites, as initially occurred in Iraq, future elimination missions should target WMD programs, using a balanced examination of WMD sites, people, and documentation. (7) DOD should seek technical innovations to improve the efficiency, speed, and overall

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effectiveness of elimination operations. The objective is to reduce the needed manpower because it is in extreme demand before, during, and after a war, as shown in Iraq, and to address technical issues in Iraq operations, such as false readings on chemical detectors and electronic communication limitations. (8) Finally, senior-level government advocates are necessary to ensure adequate and sustained funding and prioritization to develop a significant WMD elimination capacity.



# Comments from the Department of Defense



NUCLEAR AND CHEMICAL  
AND BIOLOGICAL DEFENSE  
PROGRAMS

ASSISTANT TO THE SECRETARY OF DEFENSE  
3050 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3050

JUL 28 2005

Mr. Gene Aloise  
Director, Natural Resources and Environment  
U.S. Government Accountability Office  
Washington, D.C. 20548

Dear Mr. Aloise,

This is the Department of Defense (DoD) response to the GAO draft report, "Radiological Sources in Iraq: DoD Should Evaluate Its Source Recovery Effort and Apply Lessons Learned to Future Recovery Operations," dated May 18, 2005 (GAO Code 360459).

The DoD generally concurs with the draft report's recommendations. The Department had previously addressed a number of the issues identified in your recommendations and are currently addressing the others. The GAO's focus in this report does not adequately address those efforts employed during earlier operations in Operation Iraqi Freedom involving radiological source recovery operations. The focus of this report appears to be placed largely on the elimination phase of the operation and we accept your recommendations in that area.

The Department appreciates the opportunity to comment on the draft report. Technical comments were provided separately. For further questions concerning this report, please contact the undersigned, (703) 697-1771, [raymond.freeland@osd.mil](mailto:raymond.freeland@osd.mil).

Sincerely,

A handwritten signature in black ink, appearing to read "Raymond E. Freeland, Jr.", is written over a circular stamp.

Raymond E. Freeland, Jr.  
Colonel US Army

GAO DRAFT REPORT DATED MAY 18, 2005  
GAO-05-XXX (GAO CODE 360459)

"RADIOLOGICAL SOURCES IN IRAQ: DOD Should Evaluate Its  
Source Recovery Effort and Apply Lessons Learned to Future  
Recovery Missions"

DEPARTMENT OF DEFENSE COMMENTS  
TO THE GAO RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of Defense review DOD's experience with collecting and securing radiological sources in Iraq for lessons learned for potential future missions. (p. 36/GAO Draft Report)

DOD RESPONSE: Partially concur. The GAO report focuses on the Department of Energy (DOE) and Defense Threat Reduction Agency (DTRA) role in the elimination phase of operations. Little credence is given to the pre-elimination phase operations of the Nuclear Disablement Team. The lessons learned garnered from activities of the NDT during Operation Iraqi Freedom (OIF) has been documented and incorporated into the Army's new organization for combating issues of weapons of mass destruction (WMD), the 20<sup>th</sup> Support Command and have been used to make equipment and training adjustments to better meet the operational needs of the Department in the future.,

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense integrate the objective to secure radiological sources with military combat objectives, including specifying how security protection, if needed would be provided to the organization with responsibility for managing radiological sources and whether combat troops would be required to directly collect and secure sources, and including plans for the possibility of collecting, securing, and disposing of sources in a hostile military environment with widespread looting . (p. 36/GAO Draft Report)

DOD RESPONSE: Partially concur. Again, the GAO fails to distinguish between post conflict elimination operations and other operations. OSD provided for operations in theater with the deployment of the NDT. Had the NDT received the support promised by DOE, all discovered sources would have been collected into a single location, thereby easing elimination requirements. DOE was unresponsive to DTRA's requests for support, which resulted in burdening the elimination phase of the operation. The Department has provided guidance to its operational theater on the conduct of operations. To expect combat troops to safely handle these materials demonstrates a total lack of understanding of the problem and would present serious health and safety issues. The Department concurs with that part of the recommendation that addresses elimination operations. As a new mission, much work is being done and more is required to adequately address the shortfalls encountered.

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Now on p. 33.

RECOMMENDATION 3: The GAO recommended that the Secretary of Defense work with DOE, to determine criteria that define which radiological sources: (a) are of greatest risk and should be collected; (b) are being properly used and secured, and thus can be left in place; and (c) pose minimal threat and thus do not need to be collected. (p. 36/GAO Draft Report)

DOD RESPONSE: Concur. DTRA and DOE have established a list of radiological sources that is prioritized in accordance with risk factors.

Now on p. 33.

RECOMMENDATION 4: The GAO recommended that the Secretary of Defense specify the health and safety criteria, and ensure the commensurate expertise and equipment needed for collecting, securing, and disposing of sources. (p. 36/GAO Draft Report)

DOD RESPONSE: Non-concur. Recommendation is too broad and ill defined. Guidance is and always has been available. Since OIF was the first time in recent history that a capability was developed and deployed to counter a WMD threat, no unit level standard operating procedures (SOP) existed. However, the NDT developed a SOP as well as Tactics, techniques and procedures to address all these issues. The NDT continues to work with the 20<sup>th</sup> Support Command to develop changes to existing regulations to address all these particulars.

Now on p. 33.

RECOMMENDATION 5: The GAO recommended that the Secretary of Defense establish and coordinate the organization(s) responsible within DOD for collecting, securing, and disposing of sources. (p. 37/GAO Draft Report)

DOD RESPONSE: Non-concur. The Department has already identified this organization as the NDT. Additionally, the Secretary signed a letter on January 6, 2005 establishing the Commander of Strategic Command to have overall responsibility for issues relating to combating WMD. A subset of this broader mandate is collecting, securing and depositing of sources.

Now on p. 33.

RECOMMENDATION 6: The GAO recommended that the Secretary of Defense establish agreements and points of contact with DOE and other federal agencies, as needed, to specify the coordination, technical expertise, and equipment that may be needed in conducting operations to collect and secure sources in, or remove them from, a foreign country. (p. 37/GAO Draft Report)

DOD RESPONSE: Concur. STRATCOM in concert with DTRA is establishing all the plans and procedures for elimination operations. They are developing this within the inner agency to ensure all interested parties have input.

Now on p. 33.

RECOMMENDATION 7: The GAO recommended that the Secretary of Defense identify under which circumstances and for what purposes DOD will contract with private firms to conduct activities to collect and secure radiological sources, and address legal and contracting barriers to the timely use of contractors. (p. 37/GAO Draft Report)

Now on p. 33.

DOD RESPONSE: Concur. STRATCOM and DTRA are working together to determine best path forward.

RECOMMENDATION 8: The GAO recommended that the Secretary of Defense establish guidelines concerning the role of radiological experts from the country where sources need to be collected and secured. (p. 37/GAO Draft Report)

DOD RESPONSE: Concur. STRATCOM is developing the plans and procedures for elimination operations and will include support from Host Nation assets.

# Comments from the Department of State



United States Department of State

*Assistant Secretary and Chief Financial Officer*

*Washington, D.C. 20520*

JUN 9 2005

Ms. Jacquelyn Williams-Bridgers  
Managing Director  
International Affairs and Trade  
Government Accountability Office  
441 G Street, N.W.  
Washington, D.C. 20548-0001

Dear Ms. Williams-Bridgers:

We appreciate the opportunity to review your draft report,  
“RADIOLOGICAL SOURCES IN IRAQ: DOD Should Evaluate Its Source  
Recovery Effort and Apply Lessons Learned to Future Recovery Missions,”  
GAO Job Code 360459.

The enclosed Department of State comments are provided for  
incorporation with this letter as an appendix to the final report.

If you have any questions concerning this response, please contact  
Andrew Sowder, Physical Scientist, Bureau of Nonproliferation at  
(202) 736-4431.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Kaplan'.

Sid Kaplan (Acting)

cc: GAO – Terry Hanford  
NP – Stephen Rademaker  
State/OIG – Mark Duda

Department of State Comments on GAO Draft Report  
**RADIOLOGICAL SOURCES IN IRAQ: DOD Should Evaluate Its Source  
Recovery Effort and Apply Lessons Learned to Future Recovery Missions**  
GAO-05-XXX, GAO Code 360459

The Department of State appreciates the opportunity to comment on the report of the Government Accountability Office entitled, *Radiological Sources in Iraq: DOD Should Evaluate Its Source Recovery Effort and Apply Lessons Learned to Future Recovery Missions*.

1. The report appears to characterize the outlook for U.S. assistance to Iraq for radioactive source regulatory development in an overly pessimistic fashion. For example, the following phrase and various permutations occur repeatedly in the text (e.g., on pages 1 (summary), 8, 27, and elsewhere):

“...However, according to State officials, the transition to a new Iraqi government is creating uncertainties for the source regulatory agency and U.S. assistance.”

The outlook, while still uncertain, has improved in the interim. We are much less concerned now about the survival of the Iraqi Radioactive Source Regulatory Authority (IRSRA) and are focussing our support on the continued development of IRSRA into a sustainable, independent, and competent regulatory authority. To this end, the discussion on pages 29-30 reflects the progress we have made and our continuing support of Iraqi regulatory development. Perhaps a better characterization of State Department views would be captured in the following:

“However, according to State officials, unavoidable uncertainties associated with the continued evolution of the Iraqi government calls for monitoring of the program to ensure continued growth and success of an independent, competent, and sustainable regulatory authority for the control of radioactive sources and materials.”

2. Clarification is needed in the discussion of State Department approval of export licensing of U.S. origin defense products under the International Traffic in Arms Regulations (ITAR). We suggest amending paragraph 3 on page 16, to include the following explanation for the delayed approval of a DTRA export request cited in the text:

"The Department has established procedures for expedited processing of export applications submitted in support of Operation Iraqi Freedom. However, the

Now on Highlights and on  
pp. 5 and 28.

Now on p. 28.

Now on para. 3, p. 12.

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application in question was required by law, Section 1514 of the Emergency Wartime Supplemental, to have a national Interest Determination at the Deputy Secretary level and subsequent congressional notification. As the application was received when Congress was not in session and notifications cannot be forwarded when they are not, the notification was made when they returned and the license subsequently issued."

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# GAO Contact and Staff Acknowledgments

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## GAO Contact

Gene Aloise, (202) 512-3841

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## Staff Acknowledgments

In addition to the contact named above, Lee Carroll, Nancy Crothers, Davi M. D’Agostino, Dan Feehan, Peter Grana, Terry Hanford, Dave Maurer, Judy Pagano, and Keith Rhodes (GAO’s Chief Technologist) made key contributions to this report.



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